

Fisher® A41 High-Performance Butterfly Valve

The Fisher A41 valve features an eccentrically mounted disc with a soft or stainless steel seal ring. Soft seals provide excellent sealing capabilities in both flow directions. The metal seal ring provides excellent shutoff against pressure applied in the recommended flow direction for both liquid and gas applications. The NOVEX and Phoenix III metal seals are available for demanding applications requiring excellent shutoff capabilities. The double D shaft combines with a variety of power and manual actuators to form a reliable, high-performance valve suitable for many power applications requiring tight shutoff.

Unless otherwise noted, all NACE references are to NACE MR0175-2002.



W9269

Fisher A41 Valve

Features

- **Exceptional Shutoff**—Bidirectional soft seal ring (see figure 2) with pressure-assisting action results in exceptional shutoff rates as shown in the specifications.
- **Shaft Retention**—Redundant shaft retention provides added protection. The packing follower and shaft step interact to hold the shaft securely in the valve body (see figure 1).
- **Easy Installation**—The valve body self-centers on the line flange bolts as a fast, accurate means of centering the valve in the pipeline.
- **Sour Service Capability**—Materials are available for applications handling sour fluids and gases. These materials comply with the requirements of NACE MR0175-2002.
- **Improved Environmental Capabilities**—The optional ENVIRO-SEAL™ packing system is designed with improved sealing, guiding, and loading force transmission. The ENVIRO-SEAL packing system can control emissions to below the EPA (Environmental Protection Agency) limit of 100 ppm (parts per million) for valves.
- **Low Cost Maintenance**—Individual disc/shaft components can be replaced after disassembly due to sleeve and taper pin connections (see figure 1).



Specifications

Valve Sizes and End Connection Styles

NPS ■ 2, ■ 3, ■ 4, ■ 6, ■ 8, ■ 10, and ■ 12 valve sizes available in ■ wafer or ■ single-flanged style (NPS 2 only in wafer style)

Maximum Inlet Pressures⁽¹⁾

Carbon Steel and Stainless Steel Valve Bodies:

Consistent with CL150 and 300 pressure-temperature ratings per ASME B16.34 unless limited by material temperature capabilities. NPS 2 is also consistent with CL600

Maximum Pressure Drops⁽¹⁾

Consistent with CL150 and 300 pressure/temperature ratings per ASME B16.34 except for PTFE, UHMWPE, and Phoenix III seals that are derated at some higher pressure/temperatures values. (See figure 3)

Shutoff Classifications

■ **PTFE, Reinforced PTFE, and UHMWPE Seal:**⁽⁴⁾ No visible leakage for this bidirectional seal per MSS SP-61. See figure 4

■ **NPS 2 Metal Seal:** Bidirectional shutoff. 0.001% of maximum valve capacity (1/10) of Class IV per ANSI/FCI 70-2 and IEC 60534-4. Pressure Drop is 740 psig forward and 100 psig reverse

■ **NOVEX Seal:** For NPS 3 through 12. Unidirectional shutoff is MSS SP-61 in the preferred flow direction. See figure 4

■ **Phoenix III Seal:** For NPS 3 through 12. No visible leakage for this bidirectional seal per MSS SP-61. See figure 4. For optional Phoenix III Fire-Tested seal⁽³⁾, consult your Emerson Process Management sales office

Material Temperature Capabilities⁽¹⁾

PTFE and Reinforced PTFE Seals: -46 to 232°C (-50 to 450°F)

UHMWPE Seal:⁽⁴⁾ -18 to 93°C (0 to 200°F)

NPS 2 Metal Seal: -46 to 538°C (-50 to 1000°F)

NOVEX Seal: -46 to 538°C (-50 to 1000°F)

Phoenix III: -46 to 232°C (-50 to 450°F)

See table 3 for component temperature ranges

Construction Materials

Refer to table 3 for standard and optional material selections

Flow Characteristic

Approximately linear

Flow Direction

Refer to figure 4

Flow Coefficients

See table 2, and Fisher Catalog 12

Noise Levels

See Catalog 12 for sound pressure level prediction

Disc Rotation

Clockwise to close (when viewing from the drive shaft end) through 90 degrees of disc rotation

Available Actuators

■ Pneumatic piston, ■ manual handwheel or ■ handlever (handlevers are available for CL150 up to an NPS 8 valve, and for CL300 up to an NPS 6 valve)

Actuator/Valve Action

With a pneumatic actuator, the valve action is reversible. Refer to the information provided in the Installation section and figure 4

Valve Classification

Face-to-face dimensions of NPS 3 through 12 in CL150 or 300, and meets API 609 or MSS SP-68 standards for face-to-face dimensions of wafer style and single-flange valves (see figure 6)

(continued)

Specifications (continued)

Mating Flange Capabilities

All sizes compatible with appropriate CL150 or 300, and NPS 2 also compatible with CL600, flanges (schedule 80 or lighter, see figure 6, dimension M)

Shaft Diameters

See figure 6

Approximate Weights

See table 1

ENVIRO-SEAL Packing

This optional PTFE or graphite packing system provides improved sealing, guiding, and transmission of loading force to control liquid and gas emissions (see figure 5). See Bulletin 59.3:041 ENVIRO-SEAL Packing Systems for Rotary Valves for more information

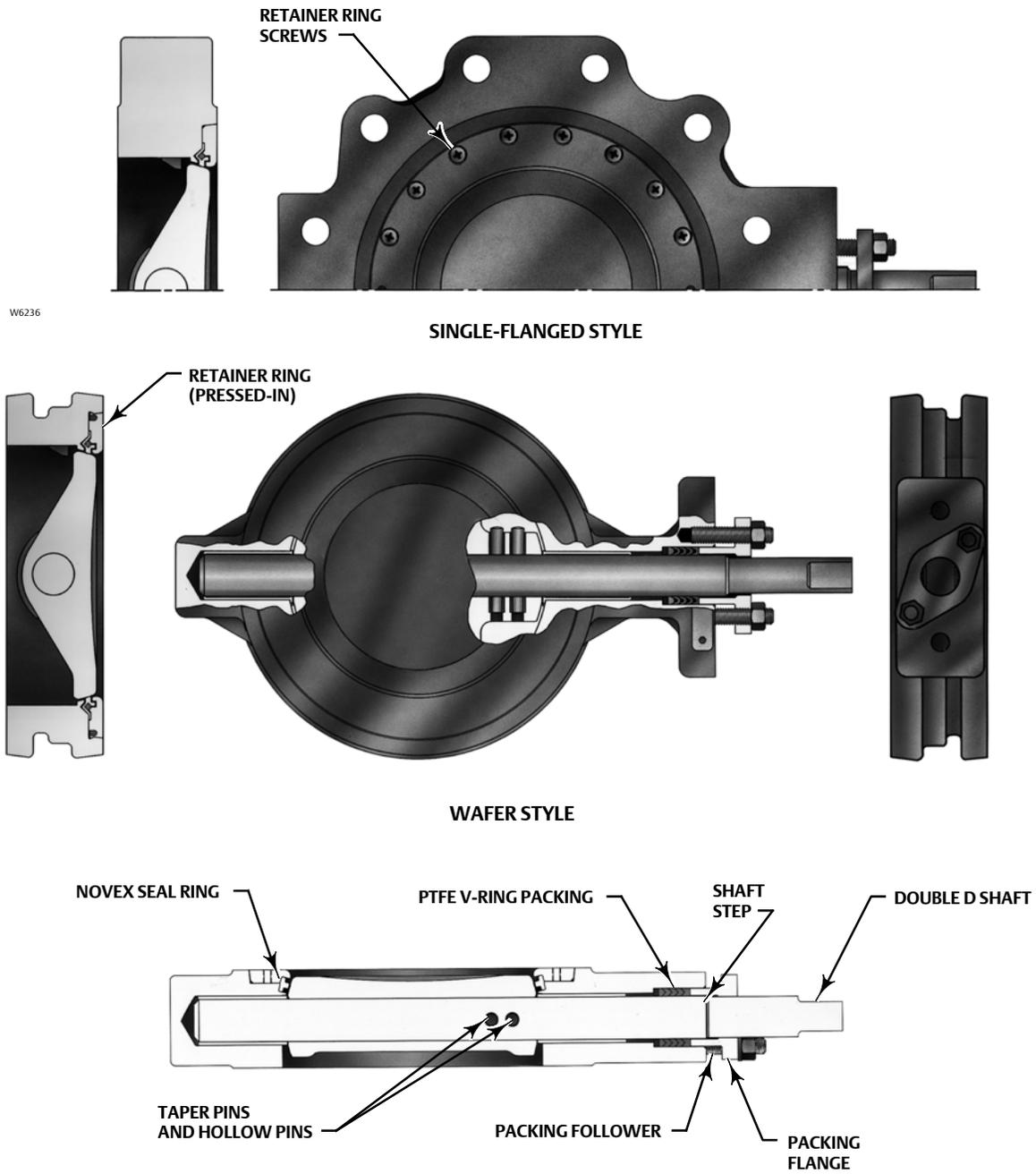
1. The pressure/temperature limits in this bulletin and any applicable standard or code limitation for valve should not be exceeded.
2. Optional Class V shutoff is available by contacting your Emerson Process Management sales office.
3. For component selection and applicable fire-tested standards and codes, consult your Emerson Process Management sales office (see table 2).
4. UHMWPE stands for ultra high molecular weight polyethylene.

Table 1. Valve Weights

VALVE SIZE, NPS	WAFER STYLE		SINGLE-FLANGE	
	CL150	CL300	CL150	CL300
Kilograms				
2	4	4	---	---
3	5	6	6	11
4	9	10	11	18
6	13	15	16	27
8	21	24	27	42
10	34	44	40	78
12	49	64	62	131
Pounds				
2 ⁽¹⁾	9.5	9.5	---	---
3	10	13	14	25
4	19	23	24	39
6	29	33	35	59
8	47	53	59	93
10	75	96	88	172
12	107	141	137	288

1. Weight of the CL600 NPS 2 valve is the same as the CL150 and CL300 values.

Figure 1. Typical Valve Construction



W6236

SINGLE-FLANGED STYLE

WAFER STYLE

W6237-1

Figure 2. Available Seal Configurations

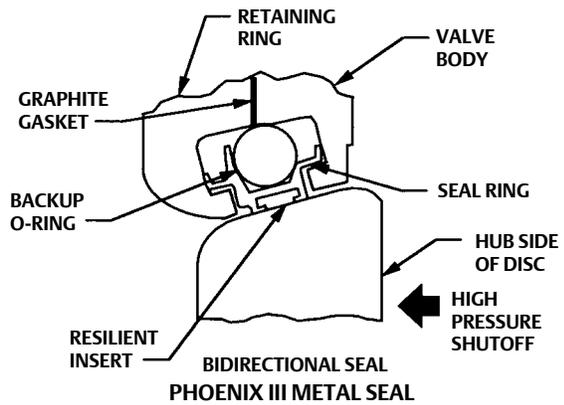
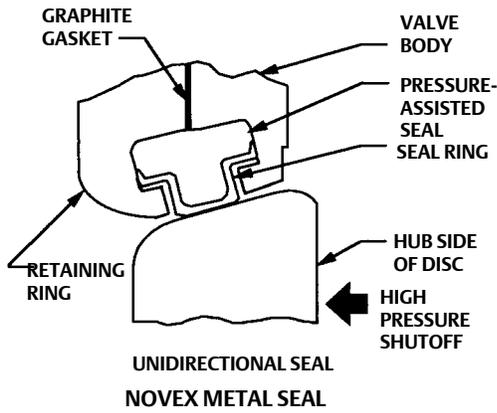
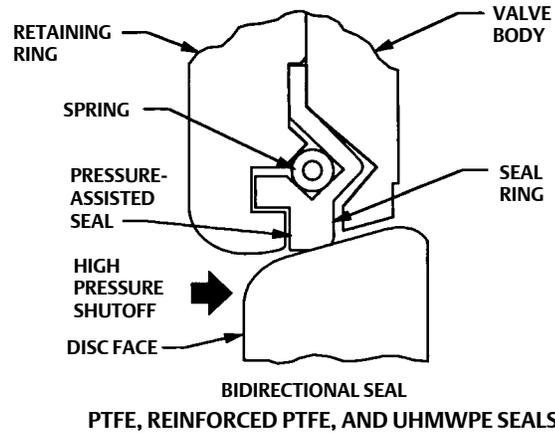
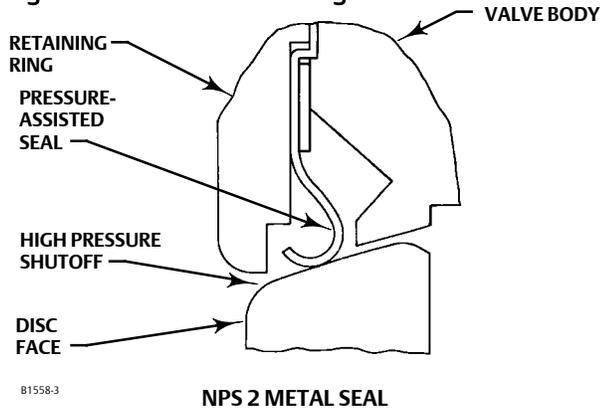
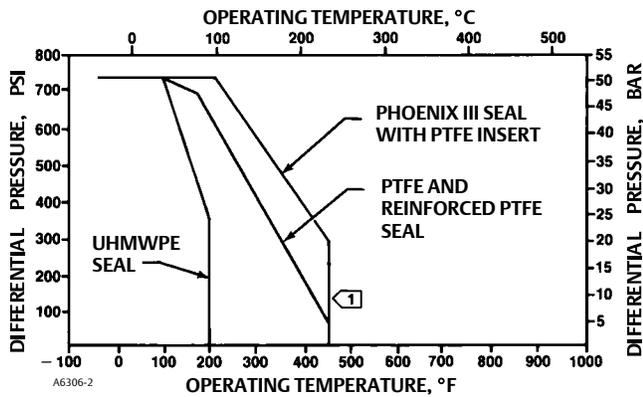


Figure 3. Maximum Pressure-Temperature Ratings



Note:

1 Temperature limitations do not account for the additional limitations imposed by the backup ring used with this seal. To determine the effective temperature limitation of the appropriate seal/backup ring combination, refer to table 3.

Table 2. Flow Coefficients⁽¹⁾

VALVE SIZE, NPS	C _v FORWARD FLOW WITH DISC WIDE OPEN (90 DEGREES ROTATION)	
	CL150	CL300
2	80.2	80.2
3	286	237
4	499	488
6	1250	1110
8	2180	2070
10	3600	3480
12	5400	5130

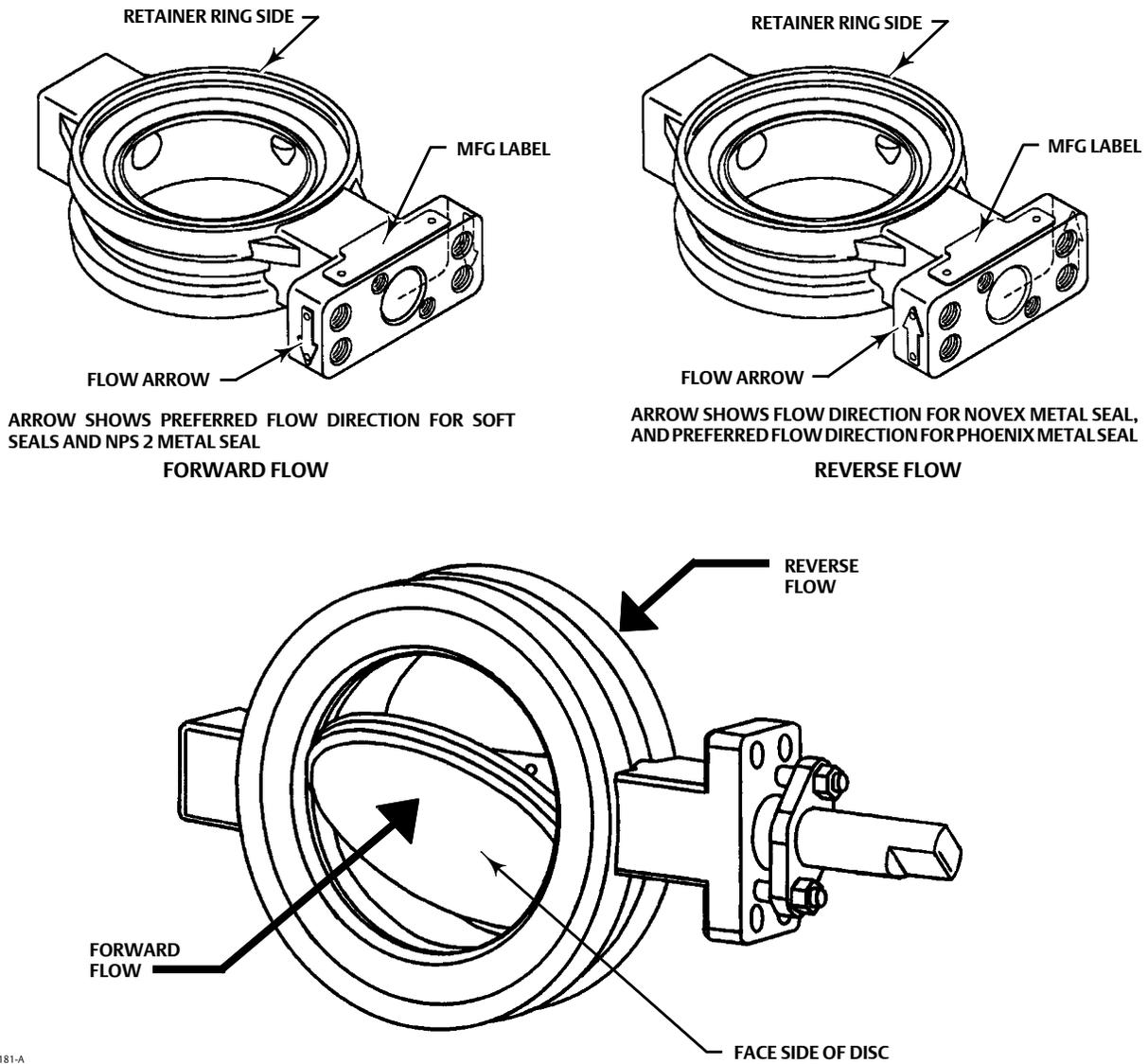
1. Refer to Fisher Catalog 12 for a complete listing of flow coefficients.

Table 3. Construction Material Temperature Limits

COMPONENTS AND MATERIALS OF CONSTRUCTION	TEMPERATURE LIMITS	
	°C	°F
Valve Body Material		
Carbon Steel S31600 S31700	-29 to 427 -198 to 538 -198 to 538	-20 to 800 -325 to 1000 -325 to 1000
Disc Material		
316 CG8M	-198 to 538 -198 to 538	-325 to 1000 -325 to 1000
Shaft Material		
S20910 17-4 PH	-198 to 538 -62 to 427	-325 to 1000 -80 to 800
Bearing Material		
PEEK / PTFE lined Metal	-73 to 260 -198 to 538	-100 to 500 -325 to 1000
Packing Material		
PTFE V-rings Graphite rings	-46 to 232 -198 to 438	-50 to 450 -325 to 1000
Seal Ring		
PTFE (Standard)	-46 to 232	-50 to 450
Reinforced PTFE Soft Seal Ring	-46 to 232	-50 to 450
UHMWPE Soft Seal Ring	-18 to 93	0 to 200
NOVEX Metal Seal Ring	-46 to 538	-50 to 1000
NPS 2 Metal Seal ring	-46 to 538	-50 to 1000
Phoenix III Metal Seal Ring Fluorocarbon backup ring	-40 to 232	-40 to 450
Phoenix III Fire-Tested ⁽¹⁾ Metal Seal Ring Fluorocarbon backup ring (Specify metal bearings and graphite packing)	(1)	(1)

1. For component selection and applicable fire-tested standards and codes, consult your Emerson Process Management sales office.

Figure 4. Flow Direction



7581181-A
A8881-2

Note:

1. By Emerson Process Management definition: Forward flow is into the face side of the disc. Reverse flow is into the hub side of the disc.

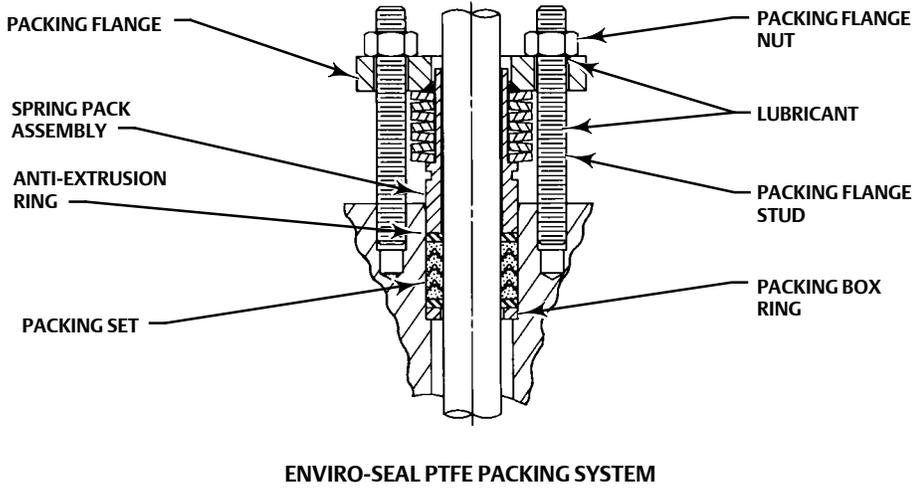
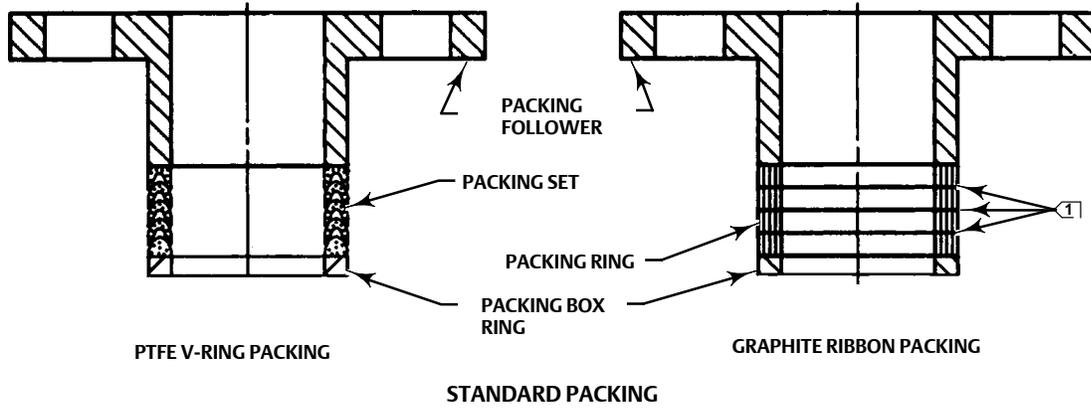
Installation

It is recommended that the valve drive shaft be mounted in a horizontal position. Operating conditions may require specific valve/actuator fail action, styles, positions and flow direction. Valves with NOVEX seal rings require mounting in the reverse flow direction. Refer to figure 4. Large valve/actuator assemblies may require additional support because of the combined weight.

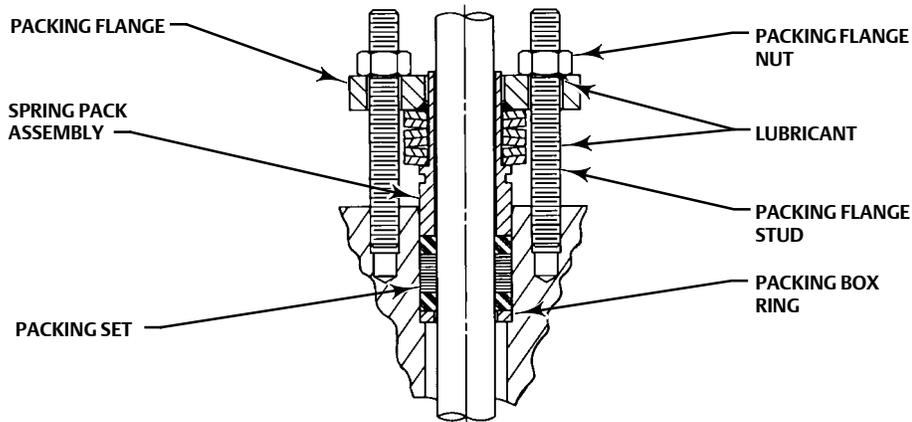
Fail Action: For actuators with spring returns, spring fail action is available for: fail-to-open or fail-to-close valve action. The valve action is field reversible.

For assistance in selecting the valve/actuator mounting suited to your application, consult your Emerson Process Management sales office. Dimensions for wafer-style and single-flanged valves are shown in figure 6.

Figure 5. Packing Arrangements



ENVIRO-SEAL PTFE PACKING SYSTEM



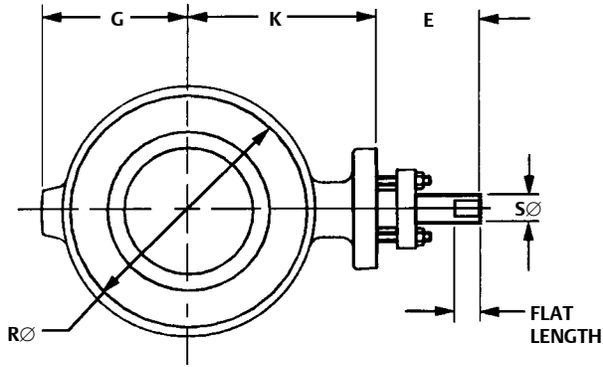
ENVIRO-SEAL GRAPHITE PACKING SYSTEM

C0785*A

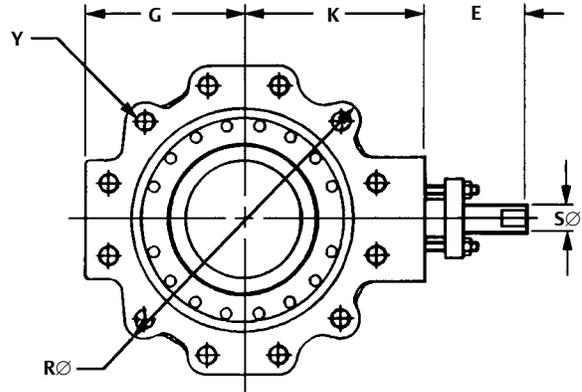
Note:

1 > Includes zinc washers for graphite ribbon packing only.

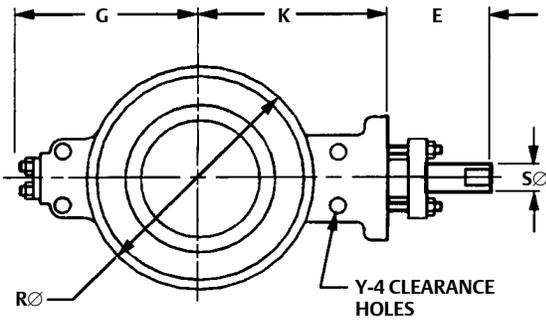
Figure 6. Typical Valve Dimensions (also see tables 4 and 5)



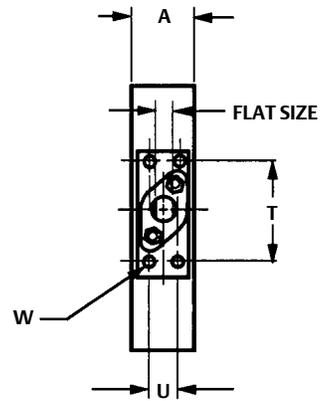
WAFER STYLE VALVE



SINGLE-FLANGE VALVE

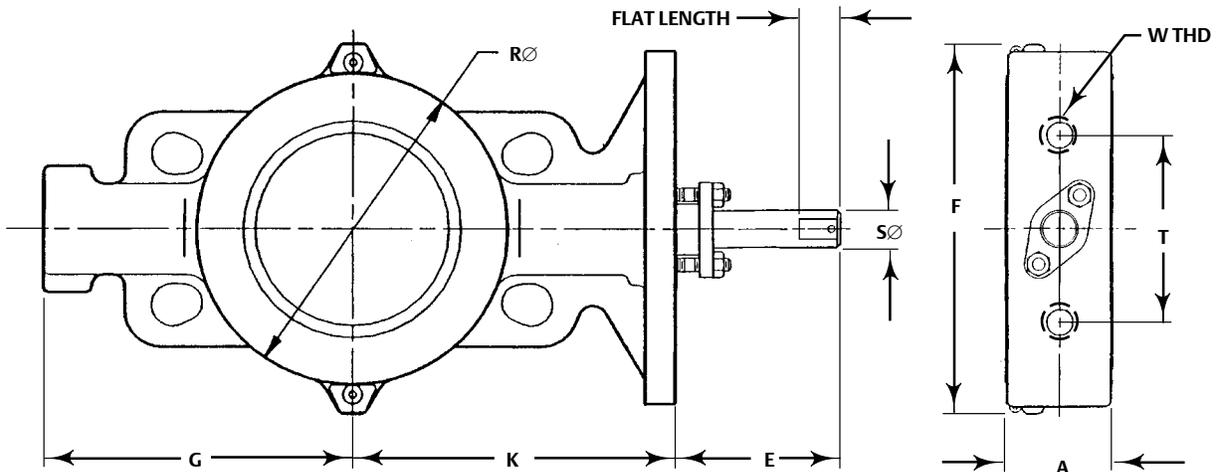


NPS 12 CL300
WAFER-STYLE VALVE



TYPICAL VALVE MOUNTING

1480818-D
1480829-D
1480830-D
B2437-2



NPS 2 A41
WAFER STYLE VALVE

18A3110-E
18A9075-C
A7082

Table 4. CL150 Valve Dimensions

Valve Size, NPS	A	E	G		K	M(2)	R		S(1)	Flat Size	Flat Length	T	U	W	Y
			Wafer Style	Single Flange			Wafer Style	Single Flange							Single Flange Only
mm															
2	45	83	102	---	102	---	103	---		9.50	25.4	79	---	See thread information below	---
3	48	83	70	79	121	73	133	189	12.7	9.50	25.4	83	19		See thread information below
4	54	83	86	102	124	97	171	219	15.9	11.07	25.4	83	19		
6	57	83	121	129	152	146	219	273	19.1	14.25	25.4	95	25		
8	64	83	155	157	181	191	272	333	25.4	17.45	25.4	95	25		
10	71	89	186	198	229	238	330	406	31.8	20.60	25.4	133	38		
12	81	89	222	230	254	284	387	476	38.1	25.37	38.1	133	38		
Inches															
2	1.78	3.25	4.00	---	4.00	1.88	4.06	---	1/2	0.374	1	3.12	---	1/2-13	---
3	1.88	3.25	2.75	3.12	4.00	2.88	5.25	7.44	1/2	0.374	1	3.25	0.75	3/8-16	5/8-11 4-holes
4	2.12	3.25	3.38	4.00	4.88	3.81	6.75	8.62	5/8	0.436	1	3.25	0.75	3/8-16	5/8-11 8-holes
6	2.25	3.25	4.75	5.06	6.00	5.75	8.62	10.75	3/4	0.561	1	3.75	1.00	1/2-13	3/4-10 8-holes
8	2.50	3.25	6.12	6.19	7.12	7.50	10.69	13.12	1	0.687	1	3.75	1.00	1/2-13	3/4-10 8-holes
10	2.81	3.50	7.31	7.81	9.00	9.38	13.00	16.00	1-1/4	0.811	1	5.25	1.50	5/8-11	7/8-9 12-holes
12	3.19	3.50	8.75	9.06	10.00	11.19	15.25	18.75	1-1/2	0.999	1.5	5.25	1.50	5/8-11	7/8-9 12-holes

1. This nominal valve shaft diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators.
 2. Disc chordal swing diameter at valve face. Please verify clearance with piping.

Table 5. CL300 Valve Dimensions

Valve Size, NPS	A	E	G		K	M(2)	R		S(1)	Flat Size	Flat Length	T	U	W	Y
			Wafer Style	Single Flange			Wafer Style	Single Flange							Single Flange Only
mm															
2	45	83	102	---	102	---	103	---		9.50	25.4	79	---	See thread information below	---
3	48	83	89	95	119	73	132	206	15.7	11.07	25.4	83	19		See thread information below
4	54	83	114	121	146	97	162	238	19.0	14.25	25.4	95	25		
6	59	83	146	152	178	145	221	308	25.4	17.45	25.4	95	25		
8	73	89	175	183	210	188	276	375	31.8	20.60	25.4	133	38		
10	83	89	232	229	243	233	330	438	38.1	25.37	38.1	133	38		
12	92	89	308	308	279	278	389	508	44.4	28.55	38.1	146	38		
Inches															
2	1.78	3.25	4.00	---	4.00	1.88	4.06	---	1/2	0.374	1	3.12	---	1/2-13	---
3	1.88	3.25	3.50	3.75	4.69	2.88	5.19	8.12	5/8	0.436	1	3.25	0.75	3/8-16	3/4-10 8-holes
4	2.12	3.25	4.50	4.75	5.75	3.81	6.38	9.38	3/4	0.561	1	3.75	1.00	1/2-13	3/4-10 8-holes
6	2.31	3.25	5.75	6.00	7.00	5.69	8.69	12.12	1	0.687	1	3.75	1.00	1/2-13	3/4-10 12-holes
8	2.88	3.50	6.88	7.19	8.25	7.38	10.88	14.75	1-1/4	0.811	1	5.25	1.50	5/8-11	7/8-9 12-holes
10	3.25	3.50	9.12	9.00	9.56	9.19	13.00	17.25	1-1/2	0.999	1.5	5.25	1.50	5/8-11	1-8 16-holes
12	3.62	3.50	12.12	12.12	11.00	10.94	15.31	20.00	1-3/4	1.124	1.5	5.75	1.50	3/4-10	1 1/8-8 16-holes

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 2. Disc chordal swing diameter at valve face. Please verify clearance with piping.

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